WELDMATIC®

Operators Manual

WELDMATIC® 8mm
WELDMATIC® 10mm

CP118-40 Rev C

Weldmatic 8mm
Weldmatic 10mm
[internal wirefeeder]
Operators Manual

Weldmatic MIG welders

Weldmatic 8mm - CP118-0, Iss A
Weldmatic 10mm - CP119-0, Iss A
07/08

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Read first

The information contained in this manual is set out to enable you to properly maintain your new equipment and ensure that you obtain maximum operating efficiency.

Please ensure that this information is kept in a safe place for ready reference when required at any future time.

When ordering spare parts, please quote the model and serial number of the power source and part number of the item required. All relevant numbers are shown in lists contained in this manual. Failure to supply this information may result in unnecessary delays in supplying the correct parts.

Safety

Before this equipment is put into operation, please read the Safe Practices section of this manual. This will help to avoid possible injury due to misuse or improper welding applications.

Plastic Handle on Power Source

Please note that the handle fitted to the Weldmatic 8mm and 10mm power sources is intended for moving the equipment by hand only.

DO NOT use this handle for suspending or mounting the power source in any other manner.

Safe practices when using welding equipment

These notes are provided in the interests of improving operator safety. They should be considered only as a basic guide to Safe Working Habits. A full list of Standards pertaining to industry is available from the Standards Association of Australia, also various State Electricity Authorities, Departments of Labour and Industry or Mines Department and other Local Health or Safety Inspection Authorities may have additional requirements. Australian Standard AS1674.2 provides a comprehensive guide to safe practices in welding.

Eye protection

NEVER LOOK AT AN ARC WITHOUT PROTECTION. Wear a helmet with safety goggles or glasses with side shields underneath, with appropriate filter lenses protected by clear cover lens. This is a MUST for welding, cutting, and chipping to protect the eyes from radiant energy and flying metal. Replace the cover lens when broken, pitted, or spattered.

Recommended shade filter lens

Amps	TIG	MMAW	MIG	Pulsed MIG
0-100	10	9	10	12-13
100-150	11	10	10	12-13
150-200	12	10-11	11-12	12-13
200-300	13	11	12-13	12-13
300-400	14	12	13	14
400-500	—	13	14	14
500 +	—	—	14	14

Burn protection

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate light-weight clothing, reflect from light-coloured surfaces, and burn the skin and eyes. Burns resulting from gas-shielded arcs resemble acute sunburn, but can be more severe and painful.

Wear protective clothing - leather or heat resistant gloves, hat, and safety-toe boots. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Avoid oily or greasy clothing. A spark may ignite them. Hot metal such as electrode stubs and work pieces should never be handled without gloves.

Ear plugs should be worn when welding in overhead positions or in a confined space. A hard hat should be worn when others are working overhead.

Flammable hair preparations should not be used by persons intending to weld or cut.

Toxic fumes

Adequate ventilation with air is essential. Severe discomfort, illness or death can result from fumes, vapours, heat, or oxygen depletion that welding or cutting may produce. **NEVER** ventilate with oxygen.

Lead, cadmium, zinc, mercury, and beryllium bearing and similar materials when welded or cut may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing air-supplied respirator.

Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form phosgene, a highly toxic gas, and lung and eye irritating products. The ultra-violet (radiant) energy of the arc can also decompose trichlorethylene and perchlorethylene vapours to form phosgene. Do not weld or cut where solvent vapours can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichlorethylene or percholorethylene.

Fire and explosion prevention

Be aware that flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the operator. Sparks and slag can travel up to 10 metres from the arc.

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are present in the work area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work can not be moved, move combustibles at least 10 metres away out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on or cut. Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

A person acting as Fire Watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if;

- Combustibles (including building construction) are within 10 metres.
- Combustibles are further than 10 metres but can be ignited by sparks.
- Openings (concealed or visible) in floors or walls within 10 metres may expose combustibles to sparks.
- Combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

After work is done, check that area is free of sparks, glowing embers, and flames.

A tank or drum which has contained combustibles can produce flammable vapours when heated. Such a container must never be welded on or cut, unless it has first been cleaned as described in AS.1674-2. This includes a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility), followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment as recommended in AS.1674-2. Water-filling just below working level may substitute for inerting.

Hollow castings or containers must be vented before welding or cutting. They can explode. Never weld or cut where the air may contain flammable dust, gas, or liquid vapours.

Shock prevention

Exposed conductors or other bare metal in the welding circuit, or ungrounded electrically alive equipment can fatally shock a person whose body becomes a conductor. Ensure that the equipment is correctly connected and earthed. If unsure have the equipment installed by a qualified electrician. On mobile or portable equipment, regularly inspect condition of trailing power leads and connecting plugs. Repair or replace damaged leads.

Fully insulated electrode holders should be used. Do not use holders with protruding screws. Fully insulated lock-type connectors should be used to join welding cable lengths.

Terminals and other exposed parts of electrical units should have insulated knobs or covers secured before operation.

If the supply cable is damaged it must be replaced by the manufacturer, their service agent or a similarly qualified person.

1 Introduction

Gas Metal Arc Welding (GMAW) is an arc welding process where a consumable wire is fed by motor driven feed rolls to a welding gun, and where welding current is supplied from the welding power source. The welding arc is struck between the work piece and the end of the wire, which melts into the weld pool. The arc and the weld pool are both shielded by gas flow from the gun, or in the case of "self shielded" wires, by gases generated by the wire core.

The process is very versatile in that by selection of the correct wire composition, diameter and shielding gas, it can be used for applications ranging from sheet-metal to heavy plate, and metals ranging from carbon steel to aluminium alloys.

The Weldmatic 8mm and Weldmatic 10mm have been designed to be used with consumable wires in the range from 0.6mm solid to 1.2mm cored diameter. The smaller wire sizes are used when welding at lower currents, such as sheet-metal applications. Increasing the wire diameter permits higher welding currents to be selected.

A common application of GMAW is for welding Mild Steel. In this application, a Mild Steel solid consumable wire such as AUSTMIG ES6 is used with a shielding gas of Carbon Dioxide, or Argon mixed with Carbon Dioxide. Alternatively, Flux-cored consumable wires are available in both gas shielded, and 'gasless' self shielding types.

Stainless steel and Aluminium can be welded with G.M.A.W. using the correct consumable wire and shielding gas.

The Weldmatic 8mm & 10mm wirefeeder has been designed to feed a range of hard, soft, and flux-cored wires for the GMAW process. A compact motor with integral gear box is coupled to a two roll drive assembly forming the basic component of the wirefeeder. The motor is controlled by an electronic speed control which provides speed regulations.

2 Receiving

Check the equipment received against the shipping invoice to make sure the shipment is complete and undamaged. If any damage has occurred in transit, please immediately notify your supplier.

The Weldmatic 8mm package (CP118-0) contains;

- Power Source CP118-2
- 3m gun and cable assembly
- 5m work lead
- Argon/mixed gas regulator
- (This) operating manual CP118-40.

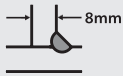
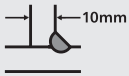
The Weldmatic 10mm package (CP119-0) contains;

- Power Source CP119-2
- 3m gun and cable assembly
- 5m work lead
- Argon/mixed gas regulator
- (This) operating manual CP118-40.

Note that accessory items are packaged inside the power source.

3 Specifications

Manufactured to Australian Standard
AS1966.1. Rated to ISO 60974-1.

	Weldmatic 8mm	**Weldmatic 10mm**
Primary Voltage	240 Vac, 50/60Hz	240 Vac, 50/60Hz
Rated Primary Current	15 Amps	18 Amps
Maximum Primary Current	31 Amps	38 Amps
Recommended Circuit Breaker	20 Amp	25 Amp
Recommended Generator kVA	7.5 kVA	9.5 kVA
Rated Output @ 40°C 10 minute duty cycle time	175 Amp, 22.8 V, 20% duty 80 Amp, 18 V, 100% duty	200 Amp, 24 V, 20% duty 90 Amp, 19.5 V, 100% duty
Welding Current	30 - 175 Amps	35 - 200 Amps
Open Circuit Voltage	16.5 - 33 V	17 - 34 V
Shipping Weight	72 kg	75 kg
Fitted Supply Plug	15 Amp	15 Amp*(see note)
Fitted Supply Cable	15 Amp 30/0.25 Three Core, Heavy Duty PVC	20 Amp 50/0.25 Three Core, Heavy Duty PVC
Cooling	Fan cooled, air drawn in through front grille.	Fan cooled, air drawn in through front grille.
Insulation	Class H, 140°C Rise max	Class H, 140°C Rise max
Spool Sizes	5 kg, 15 kg	5 kg, 15 kg
Wirespeed Max	195 RPM (18 Metres per min.)	195 RPM (18 Metres per min.)
Wire Size Range **(**mm diameter)	0.6 - 0.9 (solid wire) 0.8 - 1.2 (cored wire)	0.6 - 0.9 (solid wire) 0.8 - 1.2 (cored wire)
Welding Capacity		

*15 Amp plug fitted for initial commissioning only. Refer Section 5.

4 Controls

Fig 1 Power Source Controls

1 Arc start

This control can be set to modify arc starting conditions. For many applications the control can be set at the mid point.

Rotating the knob towards 'FAST' will provide faster wire acceleration at arc start giving quicker arts starts, suitable for applications such as rapid tack welding.

Rotating the knob towards 'SOFT' will slow wire acceleration, providing a softer start suitable for larger diameter and aluminium wires.

2 Overload Indicator

This is illuminated when the welding load exceeds the equipment's operating duty cycle. In this event the equipment will cease to deliver welding current. The over-temperature thermostats will reset automatically - do not switch the equipment off as the cooling fan will assist the resetting of the thermostats.

Once the machine has cooled sufficiently, the thermostat will reset, the Overload Indicator will go out and welding may be resumed.

3 Spot Time Control

When operating in Spot mode, this control will vary the spot weld time. Rotating the dial in a clockwise direction will increase the spot weld time.

4 Fine Voltage Control

This switch provides Fine adjustment of the output welding voltage over three ranges.

Note: Minimum welding voltage is obtained with Coarse A and Fine 1 selected. Maximum welding voltage is obtained with Coarse C and Fine 3 selected.

Do not operate the Voltage Control switches during welding

5 Coarse Voltage Control

This switch provides Coarse adjustment of the output welding voltage over three ranges.

6 Wire Speed Control

This control provides adjustment of the wirefeed speed. Rotating the dial in a clockwise direction will increase the wirefeed speed, thereby increasing the welding current.

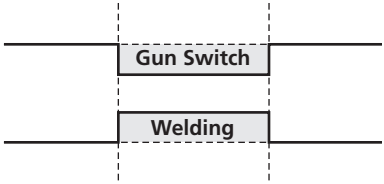
7 Control Circuit Breaker

The machine control circuits are protected by a 5 Amp circuit breaker located inside. if necessary, the circuit breaker can be reset by pressing the central red button.

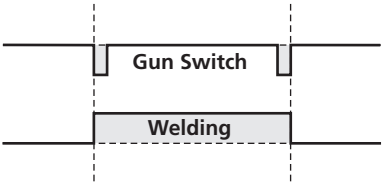
8 Gun Switch Control

Three gun switch modes are available:

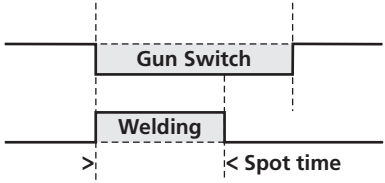
'NORMAL' - Welder operates while the gun switch is closed, welding ceases when the switch is opened.



'LATCH' - Welder operation is initiated by a 'close and release' of the gun switch. Welding continues until a second 'close and release' action.



'SPOT' - Welding is initiated by closing the gun switch. The weld duration is controlled by the 'SPOT TIME' setting.



9 Standby switch

When set to 'STANDBY', the welder will not operate.

CAUTION: Live parts exist on internal components and wiring when the machine is in 'STANDBY'. Before any work is undertaken on any internal parts (ie accessed by removing machine covers) the unit must be completely isolated from the mains supply.

10 Euro Gun/Cable Connector

11 Positive Welding Output Terminal

12 Negative Welding Output Terminal

5 Installation

Connection to Electrical Mains Power Supply

The Weldmatic 8mm and 10mm are factory fitted with a mains power supply cable with moulded 3 pin, 15 Amp, Single Phase plug.

Note: If the Weldmatic 10mm is to be used at maximum output current and duty cycle, an appropriate 20 Amp plug should be fitted by a qualified electrician.

The minimum capacity of the mains wiring and power outlet supplying a welder is selected according to the **effective primary current** of the equipment. Refer to 'Specifications' (Section 3) for the relevant 'Effective Primary Current' rating and recommended mains circuit breaker.

Note : Due to normal variations of sensitivity, the tripping time of some circuit breakers may limit the duty cycle available from the Weldmatic 8mm and 10mm. A higher rated circuit breaker can be selected, but the mains wiring capacity must be increased to suit.

The current rating of the mains wiring depends on cable size and method of installation. Refer to AS/NZS 3008.1, Table 9.

If it becomes necessary to replace the mains flexible supply cable, use only cable with correct current rating. Access to the supply terminals is gained by removing the power source side panels.

The replacement cable must be fitted and retained in the same manner as the original.

Fan on Demand

The Weldmatic 8mm and 10mm feature fan on demand. The cooling fan will only run when required to cool internal components. When no longer required, the fan will automatically stop.

Replacement of the cable must be carried out by the manufacturer, their service agent or a similarly qualified person.

Output Voltage Polarity

The design of the Weldmatic 8mm and 10mm allows selection of the output voltage polarity.

Positive Wire

G.M.A.W. with solid consumable wires including aluminium, is carried out with the work piece Negative and the welding wire Positive.

To setup for this condition, connect the 'WORK' lead plug into the (-) output socket on the Power Source, and the 'WELDING' lead from the power source into the (+) socket, as in Figure 2.

Fig 2 Positive Wire

Negative Wire

Some 'self-shielded' flux cored consumable wires are operated with the work piece Positive and the consumable wire Negative. Refer to the manufacturers data for the particular consumable wire to be used.

To setup for this condition, connect the 'WORK' lead plug into the (+) output socket on the Power Source, and the 'WELDING' lead from the power source into the (-) socket, as in Figure 3.

Fig 3 Negative Wire

Fitting the gas cylinder

Place the gas cylinder on the tray at the rear of the optional welder trolley (if using). Retain the cylinder with the chain provided.

Fit the gas regulator to the cylinder. DO NOT apply grease or oil to these joints.

Fit the end of the gas inlet hose from the back of the power source to the connector supplied with the gas regulator, and secure with the clamp also supplied.

Fitting The Gun and Cable Assembly

The supplied gun/cable assembly is equipped with a 'Euro' wirefeeder connector which incorporates all required connection points for welding current, shielding gas and gun switch control.

To attach the gun/cable assembly to the wirefeeder mechanism, engage the mating parts of the male and female Euro connectors, then rotate the locking ring clockwise to firmly secure the connection.

Fitting the Consumable Wire

Place the spool of welding wire onto the spool holder. The location pin should mate with a hole provided on the wire spool body. Fit the spool retaining 'R' clip supplied. Check the adjustment of the spool brake adjuster, which should be set to prevent over run of the wire spool at the end of a weld, without unduly loading the wirefeed motor.

The quality of the consumable wire greatly affects how reliably a gas metal arc welder will operate. For best results when welding mild steel, we recommend quality WIA AUSTMIG ES6. Dirty, rusty or kinked wire will not feed smoothly through the gun cable and will cause erratic welding. Deposits from the wire will clog the gun cable liner requiring it to be replaced prematurely.

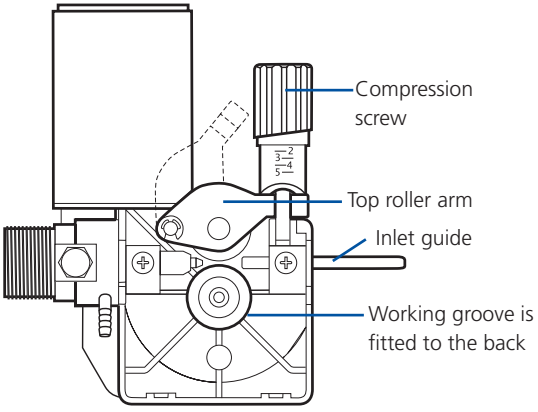
Feeding the Consumable Wire

At the wirefeed assembly, release the compression screw by swivelling it outwards. This allows the top roller arm to spring to the open position. The end of the welding wire can now be passed through the inlet guide, over the bottom drive roller, and into the output wire guide tube.

Check that the drive roll groove is correct for the wire in use. The wire size is stamped adjacent to each groove. The working groove is installed to the back. Check also that the correct size contact tip is fitted at the gun end. Feed roller and tip details are shown later in this manual.

Return the top roller arm to the closed position and adjust the compression screw to provide sufficient clamping of the drive roll to achieve constant wirefeed. Do not over tighten.

With the equipment energised, operate the gun switch to feed wire through the gun cable.



6 Normal Welding Sequence

Weld Start

Closing the welding gun switch initiates this sequence of events:

- The gas valve is energised and gas flow commences;
- The power source contactor is initiated. Welding voltage is applied between the work piece and the consumable wire.
- The wire drive motor is energised.
- The wire touches the work piece, and the arc is established.

Weld End

Releasing the gun switch initiates this sequence of events:

- The wire drive motor is de-energised, and is dynamically braked to a stop;
- The power source contactor is released.
- The gas valve is de-energised and the flow of shielding gas ceases.

7 Basic Welding Information

Choice of Shielding Gas

The choice of shielding gas is largely determined by the consumable wire to be used. Many proprietary shielding gas mixtures are available.

The recommended shielding gases for use with the Weldmatic 8mm and 10mm are:

- Mild Steel — Argon + 5 to 25% Carbon Dioxide;
- Aluminium — Argon;
- Stainless Steel — Argon + 1 to 2% Oxygen.

Consult your gas supplier if more specific information is required.

Shielding Gas Flow Rate

In G.M.A. welding, one function of the shielding gas is to protect the molten weld pool from the effects of oxygen in the atmosphere. Without this protection the weld deposit becomes 'honeycombed' in appearance, an effect which is described as weld porosity.

In draft-free conditions the gas flow rate required to give adequate protection is typically 10-12 litres/min. In situations where drafts cannot be avoided, it may be necessary to increase this rate up to 20 litres/min, and/or to provide screening of the work area.

Weld porosity can also be caused by air entering the gas stream through a damaged hose, loose gas connection, or from restriction in the nozzle, such as from excess build-up of spatter.

When welding aluminium, particular care must be taken with all aspects of shielding gas delivery and workpiece preparation in order to avoid weld porosity.

Establishing a Weld Setting

Once the consumable wire type, wire size and shielding gas have been chosen, the two variables that are adjusted in order to obtain a the desired weld setting are;

- Wirefeed speed,
- Welding arc voltage.

For each of the combinations of voltage control switch settings, there is a range of valid wirespeed settings.

The wirefeed speed determines the welding current; increasing the speed increases the current, and decreasing it decreases current.

The selected wirefeed speed must be matched with sufficient arc voltage; a speed increase requires an increase of arc voltage.

If the voltage is too low the wire will stub and stutter, and there will not be a steady arc. If the voltage is too high the arc will be long with metal transfer occurring as a series of large droplets.

Important: Do not operate the Voltage Control switches during welding.

The weld setting should be chosen to suit the application and the thickness of the metal to be welded. It is important to check that the deposited weld provides sufficient strength to suit the application.

A "good" weld will have the characteristics illustrated in Figure 4. The weld has penetrated into the parent metal, fusing the root of the joint where the two plates meet, and the weld blends smoothly into the side walls.

A "bad" weld is shown in Figure 5. The weld has not penetrated the joint root, and there is poor side wall fusion. This lack of fusion would normally be corrected by increasing the arc voltage, or by increasing both wirefeed speed and arc voltage to achieve a higher current weld setting.

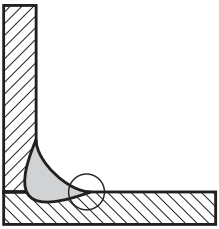


Fig 4 "Good" Weld

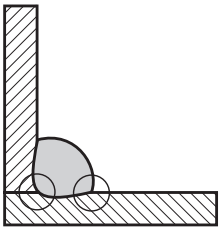


Fig 5 "Bad" Weld

Gun Position

For "down hand" fillet welding with gas shielded solid wires, the gun is normally positioned as shown in Figure 6a, with the nozzle end pointing in the direction of travel.

For "down hand" fillet welding with gasless flux cored wires, the gun is normally positioned as shown in Figure 6b, with the nozzle end pointing away from the direction of travel, referred to as 'dragging' the weld. Gasless flux cored wires should be operated with approximately 15mm of wire 'stick-out' from the welding contact tip as shown in Figure 6c.

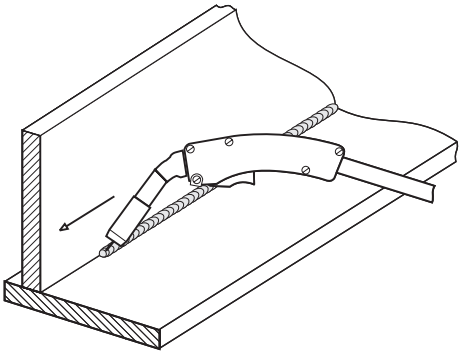


Fig 6a Gas Shielded Solid Wires

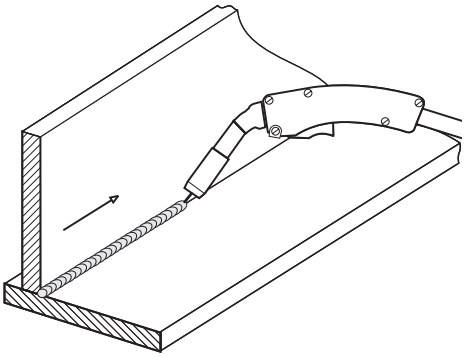


Fig 6b Gasless Flux Cored Wires

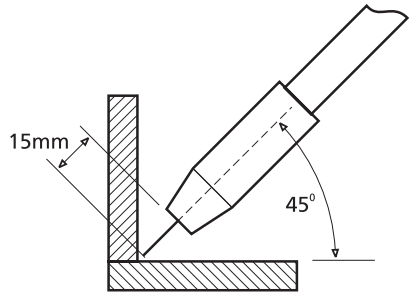


Fig 6c Wire Stickout for Gasless Welding

Duty Cycle

The term duty cycle indicates the percentage welding time available at the rated output current, for each 10 min period over 4 hours.

If the machine is operated at a reduced welding current, a higher duty cycle is available. The diagrams below illustrate the appropriate duty cycle rating for the range of welding currents available from the Weldmatic 8mm and 10mm, and so allows the maximum welding time per 10 minute period to be determined.

The power source is protected by in built over temperature protection devices. These will operate if the machine is operated in excess of its current and duty cycle rating. If this occurs, the fan will continue to run, but the machine will not deliver welding current until the unit has cooled sufficiently.

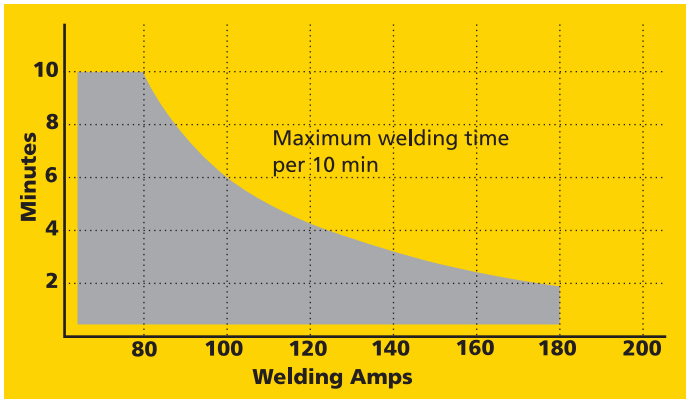


Fig 7a Duty Cycle Rating - Weldmatic 8mm

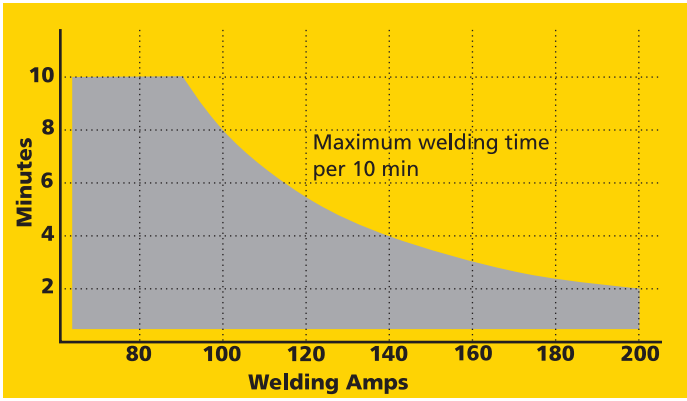


Fig 7b Duty Cycle Rating - Weldmatic 10mm

8 General Maintenance

Before removing the equipment cover, ENSURE that the equipment is disconnected from the mains power supply. When the equipment is energised LETHAL VOLTAGES are present on the electrical components enclosed.

Dust

Care should be taken to prevent excessive build-up of dust and dirt within the welding power source. It is recommended that at regular intervals, according to the prevailing conditions, the equipment covers be removed and any accumulated dust be removed by the use of dry, low pressure compressed air, or a vacuum cleaner.

Wirefeed

In order to obtain the most satisfactory welding results from the G.M.A.W. process, the wirefeed must be smooth and constant. Most causes of erratic wirefeed can be cured by basic maintenance. Check that the:

1 Feed rolls are the correct size and type for the wire in use. Check also that the drive groove is aligned with the wire and that the groove is not worn;

2 Gun cable liner is clear of dust and swarf build-up. When replacement becomes necessary, fit only the correct liner (see page 23). The build-up of dust can be minimised by regular purging of the liner with dry compressed air. This may be conveniently done each time the wire spool is replaced;

3 Welding tip is free of obstructions such as spatter build-up. Ream out the tip bore with a suitable size oxy-tip cleaner. Replace the welding tip as it becomes worn;

4 Feed roll pressure is not excessive. The pressure should be just sufficient to feed the wire evenly. Excessive pressure will deform the electrode wire and make feeding more difficult;

5 Consumable wire spool holder rotates smoothly and that the braking action is not excessive. The spool should only have sufficient braking to prevent over run when the motor stops. This also may be conveniently checked each time the wire is replenished;

7 Welding wire is straight and free of buckles or 'waviness'. To check, remove 2 or 3 metres of wire from the spool. Clamp one end in a vice or similar, then holding the other end pull the wire out straight. Look down the length of the wire, any buckles will be obvious. Buckled wire is extremely difficult to feed reliably and should be replaced;

8 Welding wire is free of surface rust. Replace if rust is evident.

9 External Trouble Shooting

If the following checks do not identify the fault condition, the equipment should be returned to a WIA Service agent.
Phone 1300 300 884 for details of your nearest service agent.

Power source has no output and no wirefeed when gun switch is closed:

'STANDBY' switch is not illuminated

1 Check equipment is connected to a functional mains power outlet and 'OPERATE' is selected. Test outlet using a known working appliance.

'STANDBY' switch is illuminated

1 The machine circuit breaker may have tripped.
- Check that the wire is not fouled in the wirefeed machinery
- Push the red button (located inside the wirefeed enclosure) to reset the circuit breaker.

2 The gun switch circuit may be incomplete.
- Check the gun switch for continuity with an ohm meter when the switch is pressed. Replace if faulty
- Check the 2 pin receptacles in Euro adaptor are making contact with the mating pins from the gun Euro end.

3 Power source may have overheated.
- The Weldmatic 8mm and 10mm welding power source incorporates an in-built over-temperature thermostat which will trip if the welding load exceeds the operating duty cycle. The 'OVERLOAD' light will be illuminated. The thermostat will reset automatically - do not switch the equipment off as the cooling fan will assist the resetting of the thermostat
- If problem persists after the cool down period, call your WIA service agent.

Power source has low weld output

1 Check all electrical connections in the welding current circuit, including weld cable, work clamp and gun/cable assembly.

Circuit breaker trips during welding

1 Check the rating of the mains supply circuit breaker. Refer to the Specifications on page 6 for the recommended circuit breaker rating.

Unsatisfactory Welding Performance and Results

Erratic arc characteristics caused by poor wirefeed

Erratic wirefeed is the MOST LIKELY cause of failure in all Gas Metal Arc Welding. It should therefore be the first point checked when problems occur.

1 Refer to the points in 'Wirefeed' in Section 8

2 Check if the consumable wire is slipping in the drive rolls. Replace the feed roll if it is the incorrect size or is worn

3 Check that gun cable liner is not too short and is fitted correctly. Refer to Section 11.3 for fitting instructions.

Constant poor arc characteristics

Check that the:

1 Correct polarity has been selected for work and weld cables (refer Section 5)

2 Shielding gas is correct for the consumable wire in use (refer Section 7)

3 Ensure that the work clamp is securely tightened onto the work piece so that good electrical contact is achieved

4 All connections in the external welding circuit are clean and tight. Problems may show as hot spots

5 Work piece surface is not contaminated. Water, oil, grease, galvanising, paint, or oxide layers can severely disturb the welding arc and result in a poor weld.

Porosity in weld caused by lack of shielding gas

1 Check that the correct gas flow rate has been set (refer Section 7)

2 Check for leaks in the gas hose. Replace if leaking

3 Check for leaks in gun/cable assembly, eg. fractured gas hose, broken or missing 'O' rings. Replace as required

4 Check the gun nozzle is free from spatter and is firmly attached to the welding gun to ensure that no air is being drawn into the shielded area.

10 Service Information.

The following information is intended for use by qualified service personnel. When the unit is energised LETHAL VOLTAGES are present on the electrical and electronic components. It is not intended that persons without suitable training and knowledge attempt to perform service tasks on the components of this welder.

Before removing the equipment cover, ENSURE that the equipment is disconnected from the mains power supply. When the equipment is energised LETHAL VOLTAGES are present on the electrical components enclosed.

10-1 PWA005N Control Board

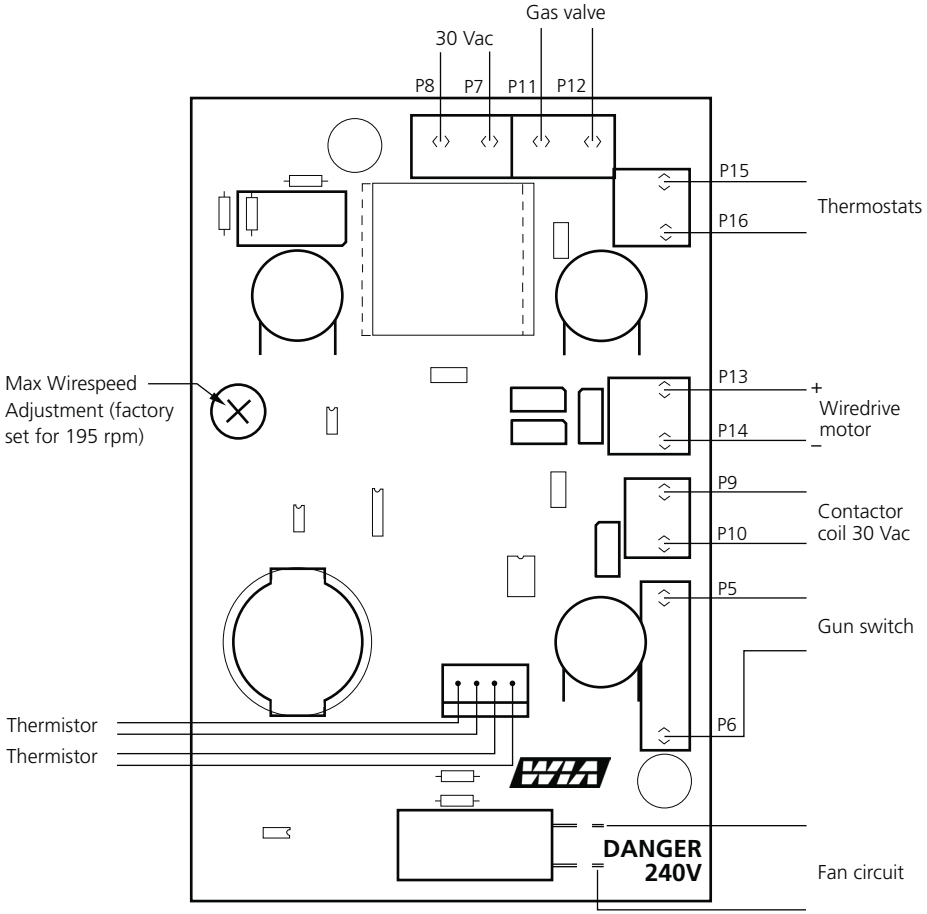


Fig 8 PWA005N Control Board

10-2 Circuit Diagram

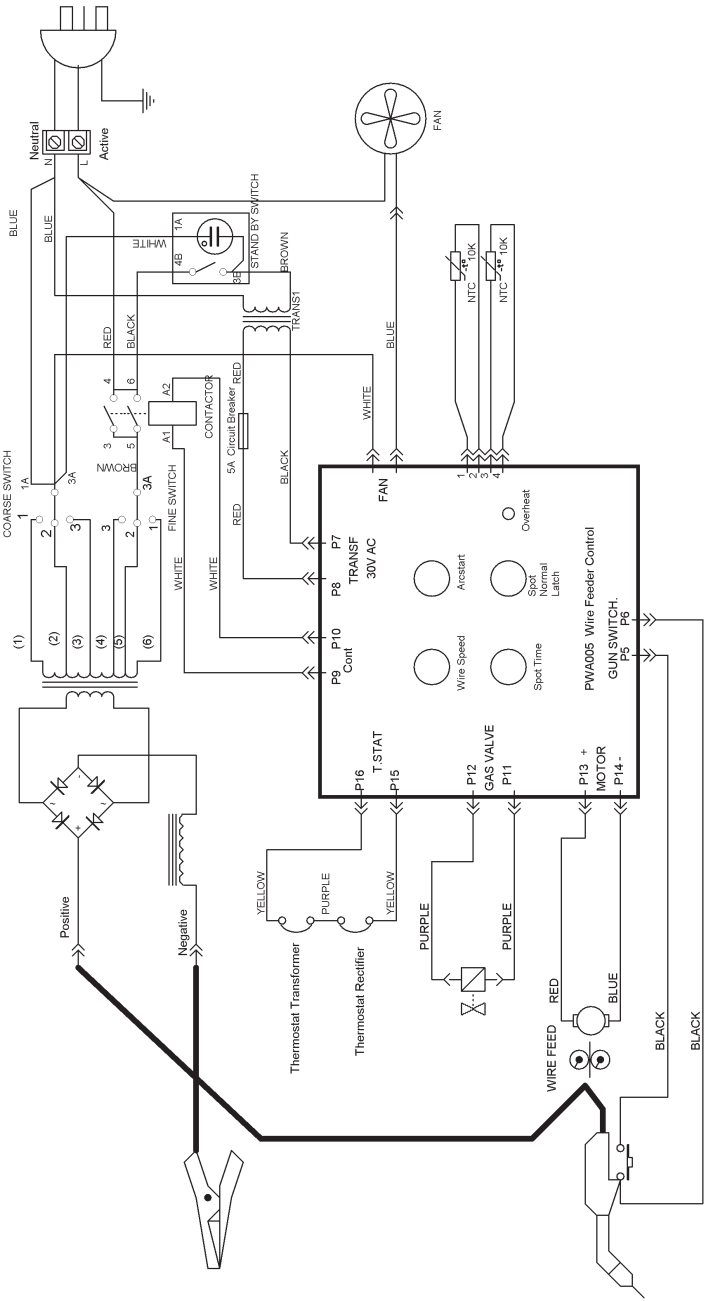


Fig 9 Weldmatic 8mm and 10mm Circuit Diagram

11.1 Assembly and Parts List - Power Source

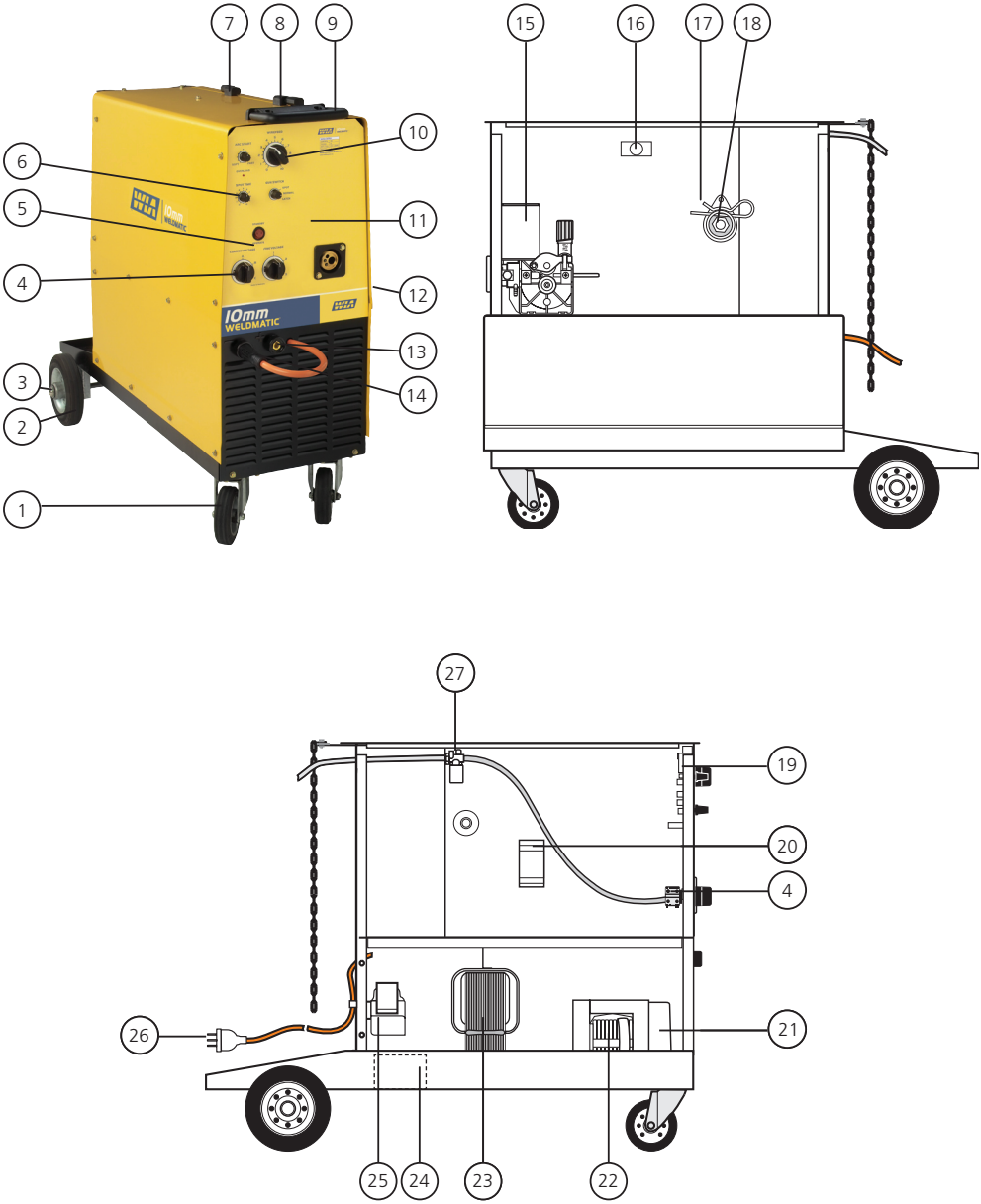


Fig 10 Weldmatic 8mm and 10mm Power Source Assembly

Item #	Part # Weldmatic 8mm	Part # Weldmatic 10mm	Description	Qty
1	WHL002	WHL002	Wheel, Rubber, Castor	2
2	WHL003	WHL003	Wheel, Rubber, Fixed	2
3	M0020	M0020	Ratchet Cap	1
4	CP110-10/1N	CP110-10/1N	Switch, Coarse, Fine	2
5	E0042	E0042	Switch, Standby	1
6	E0016	E0016	Control Knob, Small	3
7	W41-0/2	W41-0/2	Hinge Set Right Hand	1
8	W41-0/1	W41-0/1	Hinge Set Left Hand	1
9	MZ208015	MZ208015	Handle	1
10	M0029	M0029	Control Knob, Large	1
11	LST017	LST018	Sticker set	1
12	W29-1/20	W29-1/20	Slam Action Catch (not shown)	2
13	SA140-0/2	SA140-0/2	Socket, Dinse	2
14	WGEC3	WGEC3	Plug, Dinse	1
15	WF021	WF021	Wirefeed Assembly (see page 18)	1
16	E0024	E0024	Circuit Breaker, 5A	1
17	AM133-3	AM133-3	R clip	1
18	AM177	AM177	Spool holder assembly	1
19	PWA005N	PWA005N	Wirefeed Control Pcb	1
20	E0022	E0022	Contactor	1
21	D0029	D0029	Rectifier	1
Not shown	CP3-9/8	CP3-9/8	Thermostat (included in rectifier)	1
22	IND012	IND014	Inductance Assembly	1
23	TFM034	TFM038	Welding Transformer Assembly, Wired	1
Not shown	CP104-16/2	CP104-16/2	Thermostat (included in transformer)	1
24	L0020	L0020	Control Transformer	1
25	FAN004	FAN004	Fan Assembly	1
26	MC66-0/8	CP106-0/3	Mains Lead and Plug	1
27	E0041	E0041	Gas valve 24 Vdc	1
Not shown	R0028	R0028	Fan on Demand Thermistor	2

11.2 Assembly and Parts List - Wirefeed

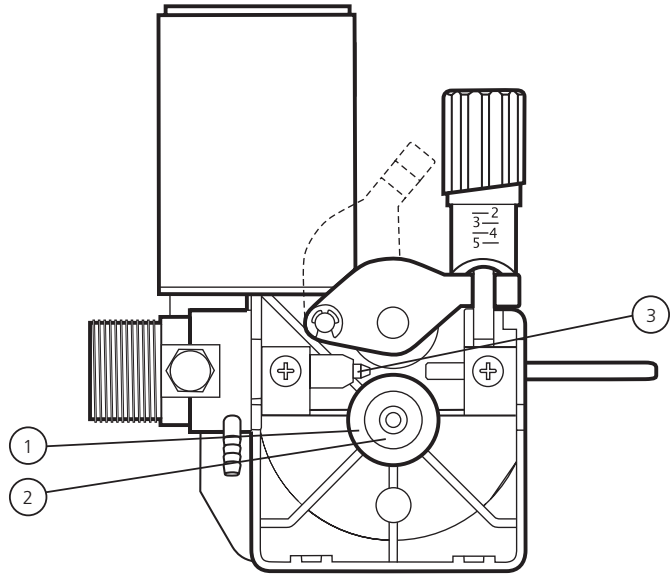


Fig 11 WF021 Wirefeed Assembly

WF021, Wirefeed Assembly Complete

Item #	Part#	Description
1	W51-0/20	Fixing Cap
2	W50-0/27	Adapter Ring
3	WF001-21	Outlet Guide Tube

Feed Rolls

Part #	Description
W51-0/5	0.6 + 0.8mm, Solid Wire (fitted)
W51-0/2	0.9 + 1.2mm, Solid Wire
W51-0/1	1.2 + 1.6mm, Flux Cored Wire (knurled)
W51-0/3	0.9 + 1.2mm, Aluminium
W51-0/4	0.8 + 1.0mm, Solid Wire
W51-0/49	0.8 + 0.9mm, Flux Cored Wire (knurled)

11.3 Assembly and Parts List - Gun and Cable Assembly

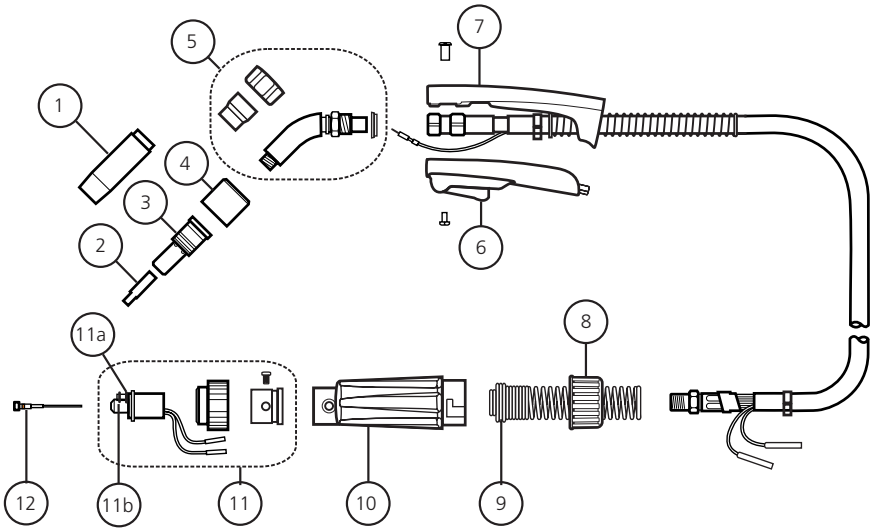


Fig 12 BEQ1510AO7CE (180 amp) Gun and Cable Assembly

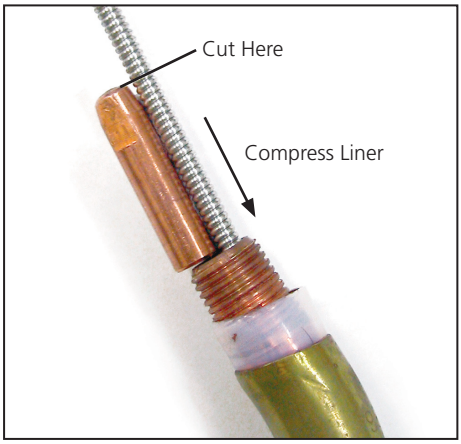
Item #	Part #	Description
1	BE4392	Nozzle Assembly
2	see 'Tips'	Contact Tip
3	BE4335	Head
4	BE4323	Cap
5	BEQT2-30 BEQT2-45	Body Tube (2", 30°) Body Tube (2", 45°)
6	BE2620054	Switch Assembly (includes lower handle)
7	BE1880194	Handle Kit (both halves, includes screws)
8	BE2520007	Cap, Rigid Strain Relief
9	BE2520048	Spring, Strain Relief
10	BE2520047	Strain Relief, Euro
11	BE1199E	Euro Direct Plug Kit
inc 11a	BE9165	Small 'O' Ring
11b	BE4421	Large 'O' Ring
12	BE43015 BE43110 BE43115X	Steel Liner 0.6 - 0.8mm Steel Liner 0.9 - 1.2mm Nylon Liner 0.9 - 1.2mm

Tips

Wire diameter	Part #
0.6mm	BE7497
0.8mm	BE7488
0.9mm	BE7489
1.2mm	BE7490

To replace liner: Disconnect gun/cable assembly at the Euro adaptor. Remove nozzle (1) and head (3). Withdraw old liner from the wirefeeder end. Insert new liner and refit gun/cable assembly to the wirefeeder.

At the gun end, compress the liner within the gun cable, then cut it **one contact tip length past the end of the body tube** (5). Refit head, tip and nozzle.



12 Warranty Information

WIA Gold Shield 3 Year Warranty

Effective 1st March 2005

At WIA, we are serious about product quality.

Every new Weldmatic and Weldarc machine comes fully backed by the WIA 'Gold Shield 3 Year Warranty', covering parts and workmanship, so you can be guaranteed you're buying reliability and performance.

This limited warranty supersedes all previous WIA (Welding Industries of Australia) warranties and is exclusive with no other guarantees or warranties expressed or implied.

Limited Warranty

Subject to the terms and conditions below, WIA warrants to its original retail purchaser that new WIA equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by WIA.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, WIA will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. WIA must be notified in writing within thirty (30) days of such defect or failure, at which time WIA will provide instructions on the warranty claim procedures to be followed.

WIA shall honour warranty claims on warranted equipment in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or 18 months after the equipment date of manufacture, whichever is the earlier.

Parts and workmanship on Weldarc and Weldmatic equipment are covered for a period of 3 years (except for gas regulator, gun cable and consumables listed below.)

Items replaced under original warranty are warranted for the remainder of the original equipment warranty, or for a period of ninety (90) days, whichever is the greater.

Gas regulator and gun/cable assembly are warranted for 90 days.

WIA's Limited Warranty shall not apply to:

1 Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays or parts that fail due to normal wear.

2 Equipment that has been modified by any party other than WIA, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

WIA PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL / INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at WIA's option: (1) repair; or (2) replacement; or, where authorised in writing by WIA in appropriate cases, (3) the reasonable cost of repair or replacement by an authorised WIA service agent; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense.

WIA's option of repair or replacement will be F. O. B. Factory at Melrose Park, Adelaide, or F. O. B. at a WIA authorised service facility as determined by WIA. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL WIA BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

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Notes

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